

Appl. No. : 10/018,637  
Filed : June 7, 2002

### REMARKS

In response to the final Office Action mailed May 18, 2005, Applicant has amended the application as above. No new matter is added by the amendments as discussed below. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the remarks set forth below.

#### **Discussion of Claim Amendments**

Claim 1 has been amended. Claims 21-23 has been added. Upon the entry of the amendments, Claims 1, 3-7, 10, 13, 15, 17 and 21-23 are pending in this application. The amendments to Claim 1 are supported by, for example, the specification at page 10, lines 1-5. New Claims 21-23 are supported by, for example, the specification at page 10, lines 1-5. Thus, no new matter is added by the amendments. Applicant respectfully requests the entry of the amendments.

#### **Discussion of Patentability of Claims 1, 3-7, 10, 13, 15 and 17**

The Examiner has rejected Claims 1, 4-7, 9 and 15 under 35 U.S.C. § 102(b) as being anticipated by Yarger (U.S. Patent No. 5,360,414). The Examiner has also rejected Claims 3, 10, 13 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Yarger in view of Hideki, et al. (JP 08-266616).

Amended Claim 1 recites, among other things, that a *depth* of each groove is 0.8mm to 1.0mm. Yarger does not disclose the above-recited feature of the claimed invention. Yarger discloses that the width of the entrance channels (32) may range from 0.1mm to 1.0mm, but says nothing about a specific range of the depth of the groove. *See column 5, lines 3-4.*

In view of the above, Applicant respectfully submits that Claim 1, as amended, is allowable over Yarger. Claims 3-7, 10, 13, 15 and 17 depend from base Claim 1, and further define additional technical features of the present invention. Furthermore, Hideki does not remedy the deficiency of Yarger. In view of the patentability of their base claim, and in further view of the additional technical features, the dependent claims are patentable over the prior art of record.

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**Discussion of Patentability of New Claims 21-23**

New Claim 21 depends from base Claim 1, and further recites that the depth of each groove is 1.0mm. In view of the patentability of its base claim, and in further view of the additional technical feature, Applicant respectfully submits that new Claim 21 is patentable over the prior art of record.

New Claim 22 recites, among other things, that *a thickness from bottom surfaces of each groove to the inner surface* of the single-pipe tube is 0.45mm to 0.5mm. Yarger at best discloses the width range (0.1mm-1.0mm) of the entrance channels (32). However, the Yarger reference does not disclose anything regarding a specific range of the thickness from bottom surfaces of each groove to the inner surface of the single-pipe tube. In view of the above, Applicant respectfully submits that new Claim 22 is allowable over the prior art.

New Claim 23 depends from base Claim 22, and further recites that the thickness from bottom surfaces of each groove to the inner surface of the single-pipe tube is 0.5mm. In view of the patentability of its base claim, and in further view of the additional technical feature, Applicant respectfully submits that new Claim 23 is patentable over the prior art of record.

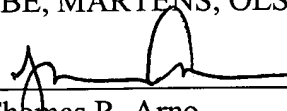
**CONCLUSION**

In view of Applicant's foregoing amendments and remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Respectfully submitted,

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